

CLAIMS

1. A method for the production of gallium nitride compound semiconductor chips from a wafer having gallium nitride compound semiconductor layers laminated on a principal surface of a substrate, comprising:

a step of linearly forming first grooves (11) in a desired chip shape by etching on a side of the gallium nitride compound semiconductor layers (2, 3) of said wafer,

a step of forming second grooves (22) having a nearly equal or smaller line width (W2) than a line width (W1) of the first grooves on a side of the substrate (1) of said wafer at positions not conforming to the central lines of the first grooves, and

a step of dividing said wafer along said first and second grooves into pieces each of a chip shape.

2. A method according to claim 1, wherein said substrate is formed of sapphire, with a C surface of the sapphire substrate as the principal surface, said first and second grooves are formed respectively along a first direction parallel to an orientation flat (11-20) and along a second direction orthogonal to said first direction, and the wafer is divided along the first and second grooves.

3. A method according to claim 1 or claim 2, wherein the positions not conforming to the central lines of said first grooves are, when viewing the substrate in plan view, positions parted by 20 to 100% of the line width (W1) of the first grooves relative to the central lines of the first grooves.

4. A method according to any one of claims 1 to 3, wherein at the step of forming said second grooves, the second grooves are formed so that the obliquely divided chips assume cut faces having angles in the range of 60 to 85°.

5. A method according to any one of claims 1 to 4, further comprising a step of polishing the substrate side prior to forming the second grooves to adjust a thickness of the substrate in a range of 60 to 100 μm

6. A method according to any one of claims 1 to 5, wherein said first grooves are confronted by an electrode-forming surface for forming an electrode for gallium nitride compound semiconductor chips.

7. A method according to any one of claims 1 to 6, wherein said second grooves are formed by at least one method selected from the group consisting of etching, dicing, pulse laser and scribe.

8. A method according to any one of claims 1 to 7, wherein said substrate is formed of hexagonal SiC.

9. A method according to any one of claims 1 to 7, wherein said substrate is formed of a hexagonal nitride semiconductor.

10. A method according to any one of claims 1 to 7, wherein said substrate is formed of hexagonal GaN.

11. Semiconductor chips obtained by the method for the production of semiconductor chips set forth in any one of claims 1 to 10.